

Flight, April 30, 1910.

FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

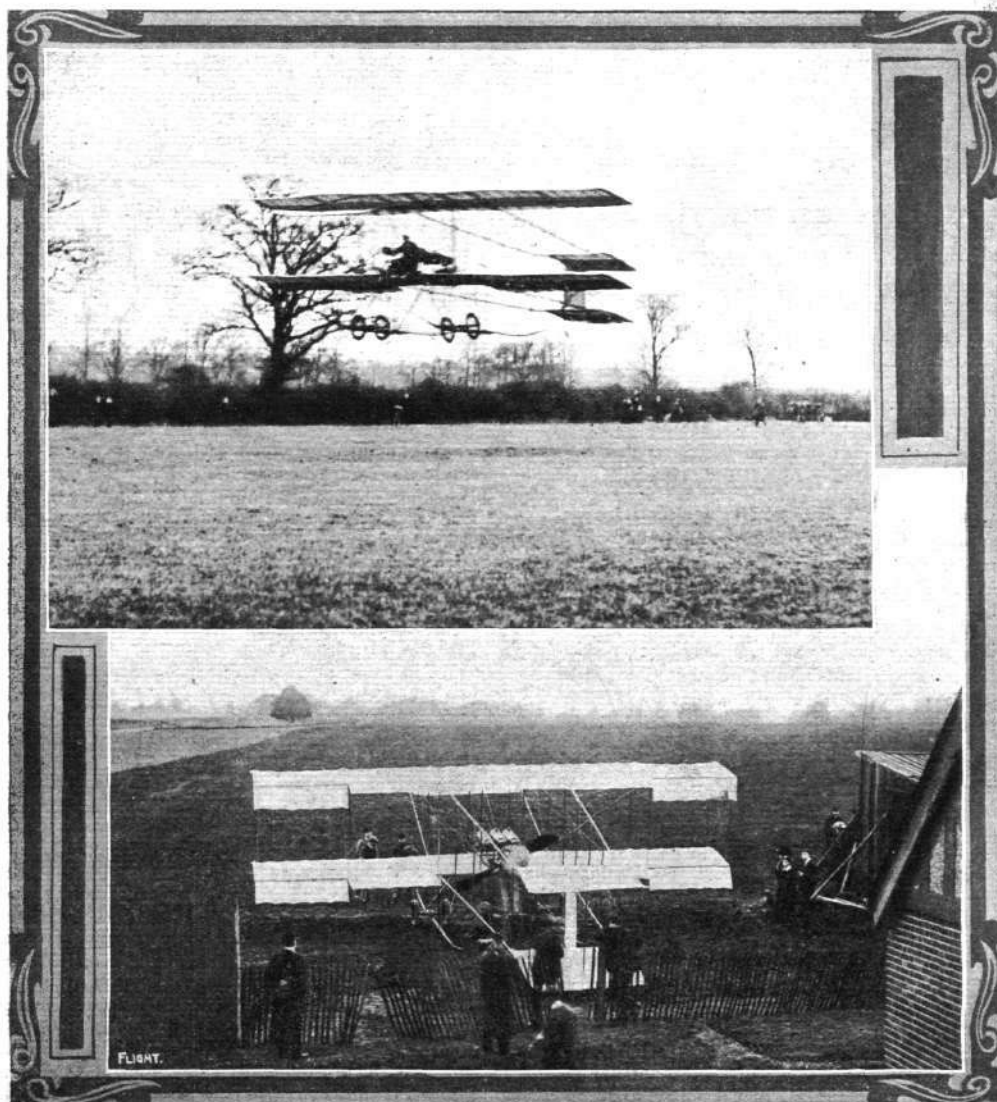
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APRIL 30, 1910.

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MR. CLAUDE GRAHAME-WHITE'S BIG CROSS-COUNTRY FLIGHT.—Be'ow, trying the Henry Farman machine at Park Royal prior to the start on Saturday last; and above, Mr. Grahame-White re-starts from Rugby for Crewe.

A BRITISH TRIUMPH.

At last we can point with pardonable pride to a cross-country flight, made by a British aviator in Great Britain itself and on a machine which, even though it may have its origin in a foreign country, is, nevertheless, a product of the skill and brains of the Englishman that Henry Farman, in spite of his French domicile, really is. Mr. Claude Grahame-White's magnificent flight may justly be called not only a British triumph but an epoch-making event. Since the science of aviation began in earnest to develop from the crudities of early experiment into a matter of everyday practicability, the public in England have had to take things far too much for granted to be good for the advancement of the movement. There are thousands, of course, who have followed the progress of the movement with great intentness, and have kept thoroughly abreast of all that has been doing, but it has necessarily been a very small minority of the people, because nothing of note has been done to bring home to that ubiquitous person, the man in the street, how much has really been done and how thoroughly practical a sport aviation is becoming. True, Blackpool, Doncaster, and Brooklands have afforded an opportunity to at any rate a part of the people to see for themselves that the stories they read in the daily paper about the pioneers and their success in the solution of the problem of flight on the heavier-than-air machine, were not altogether tales evolved from the inner consciousness of correspondents. The lesson afforded by these meetings and demonstrations was doubtless interesting, but at the same time only partly convincing, because it simply testified that it was possible for an aeroplane to leave the ground and remain in the air in the hands of a trained experimenter, for a certain length of time while soaring round and round a confined area of specially prepared ground. "Very wonderful, but merely a spectacle that is not likely to affect us personally for many years to come," was doubtless the verdict of the majority of those who have had the good fortune to witness any flying at all.

Since these meetings, at which too it cannot be said that the native-born aviator distinguished himself in any remarkable manner, the public have heard a great deal of what has been happening abroad, and only a very little of what was being done in England, until even amongst those who have been keenly following the movement, disappointment was growing afresh at British backwardness. So little fuss has, indeed, been made by our own fairly numerous band of British aviators that the public as a whole might be excused for any loss of faith in the immediate future of this country as a forcing house for aeronautic development. But now all this is altered as the consequence of the splendid performance made by an aviator whom we are proud to hail as a fellow-countryman. Mr. Claude Grahame-White's wonderful flight—even though since eclipsed by Paulhan—has literally set all England talking about nothing else but British aviation and its practical possibilities for the benefit of everyday people. On Saturday it occupied the public mind even to the exclusion of the probable result of the Final Cup-tie—and it must be something of exceeding great interest in these decadent days of the early twentieth century that will take the minds of the masses off that terribly serious event. Our people, as a nation, have not believed in flight and have not, characteristically, gone out of their way to foster and encourage something that they have no belief in except as

a risky and rather aimless sport for the very few. But now there is scarcely a person in the whole length and breadth of the country who has not a knowledge amounting to conviction that the art of flight is a very real and present development, with very little of the conjuring-trick business about it. To the plucky aviator himself we offer our heartiest congratulations on having achieved an historic performance and done such inestimable good to the movement for which we stand, even though we have to join with them our regrets that ill-luck should have prevented him from doing all that he set out to do.

To the *Daily Mail*, too, is due no small meed of appreciation for its public-spirited encouragement of the movement in Great Britain. The prize for success in reaching Manchester, with London as the starting point, is a magnificent one from the purely monetary standpoint, and though the cynical have been heard to say that the advertisement is worth the money, we think that this is taking an altogether unnecessarily narrow and unworthy view of the matter. It should not be forgotten that Lord Northcliffe stepped into the breach in the early days of motoring by guaranteeing the cost of the 1,000 Miles Trial, the tenth anniversary of which was celebrated only last week, and that this was done at a time when the future of automobilism in this country looked none too hopeful. The position of aviation has been very similar of late. Regarded by most people as the fad of a few cranks, cold-shouldered by officialdom, and with a marked disbelief in its practical future manifested by even some of its well-wishers, aviation was badly in need of something like the munificent prize offered by Lord Northcliffe's journal to give the interest a fillip. It is significant of the importance attached to flight by the donors that their prize should be far and away the largest that has been offered for a single feat, and that its terms should be so essentially British—British, that is, from the point of view of its having to be won in Britain. Even the *Daily Mail* cross-Channel prize was not quite as insular as this, inasmuch as either start or finish had to be made in a foreign country.

While we express our admiration of Mr. Grahame-White's so nearly successful attempt to win the London-Manchester prize, we would also take the opportunity of again insisting upon the sterling work that is being done in an unostentatious manner by other aviators among our own countrymen. Many names, including, of course, that of the Hon. C. S. Rolls—now doing so splendidly for England down in the South of France—would have been trumpeted from the housetops for their achievements in the air if they were the nationals of some of our very good friends beyond the narrow seas. It may be that our national characteristics have something to do with this reticence, or possibly it is that our representative aviators are being drawn from a different class of the community to those who have accomplished most on the Continent. In France the successful flying men who are coming forward are largely of the mechanic class, estimable men in every way, but whose modesty is naturally not their most remarkable feature. It may be, too, that the trained mechanic—who has more to gain and less to lose—is likely to succeed rather more rapidly in mastering the practical side of flight than our own amateurs, but it may be held that what we lose in one direction is more than compensated in another.

FLIGHT PIONEERS.



M. LOUIS PAULHAN.



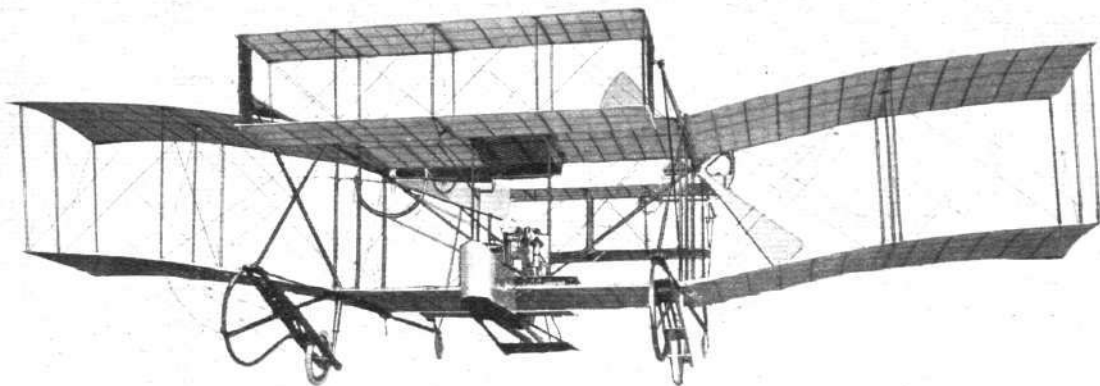
MR. CLAUDE GRAHAME-WHITE.

LONDON-MANCHESTER.

THE MAXIM BIPLANE.

It is given to few pioneers as early in the field as Sir Hiram Maxim was with his original experiments in Baldwyns Park to have an opportunity of again devoting themselves to practical work of the same description at a time when success is already a foregone conclusion

appeared in this volume of *FLIGHT*, p. 136, and we are now able to supplement that description with a very complete set of photographs and sketches, which give a very clear idea of the leading features of this interesting machine.



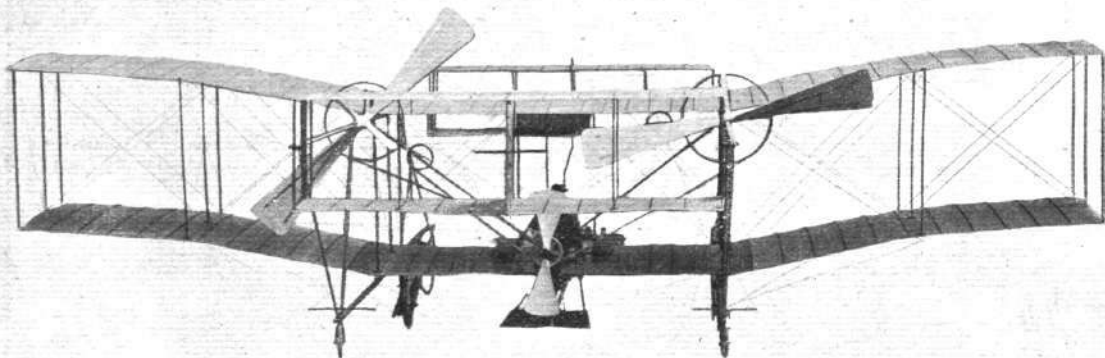
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Front view of the Maxim biplane, showing the dihedral angle formed between the central section and the arched outer sections.

along recognised lines. Yet Sir Hiram Maxim, who built his first machine at a time when it was impossible to achieve success owing to the absence of the modern petrol engine, has lived to see the conquest of the air by

Some Leading Features.

The machine is a large biplane and is characterised by the unusual form of dihedral angle exhibited in the disposition of the main planes, and also by the use

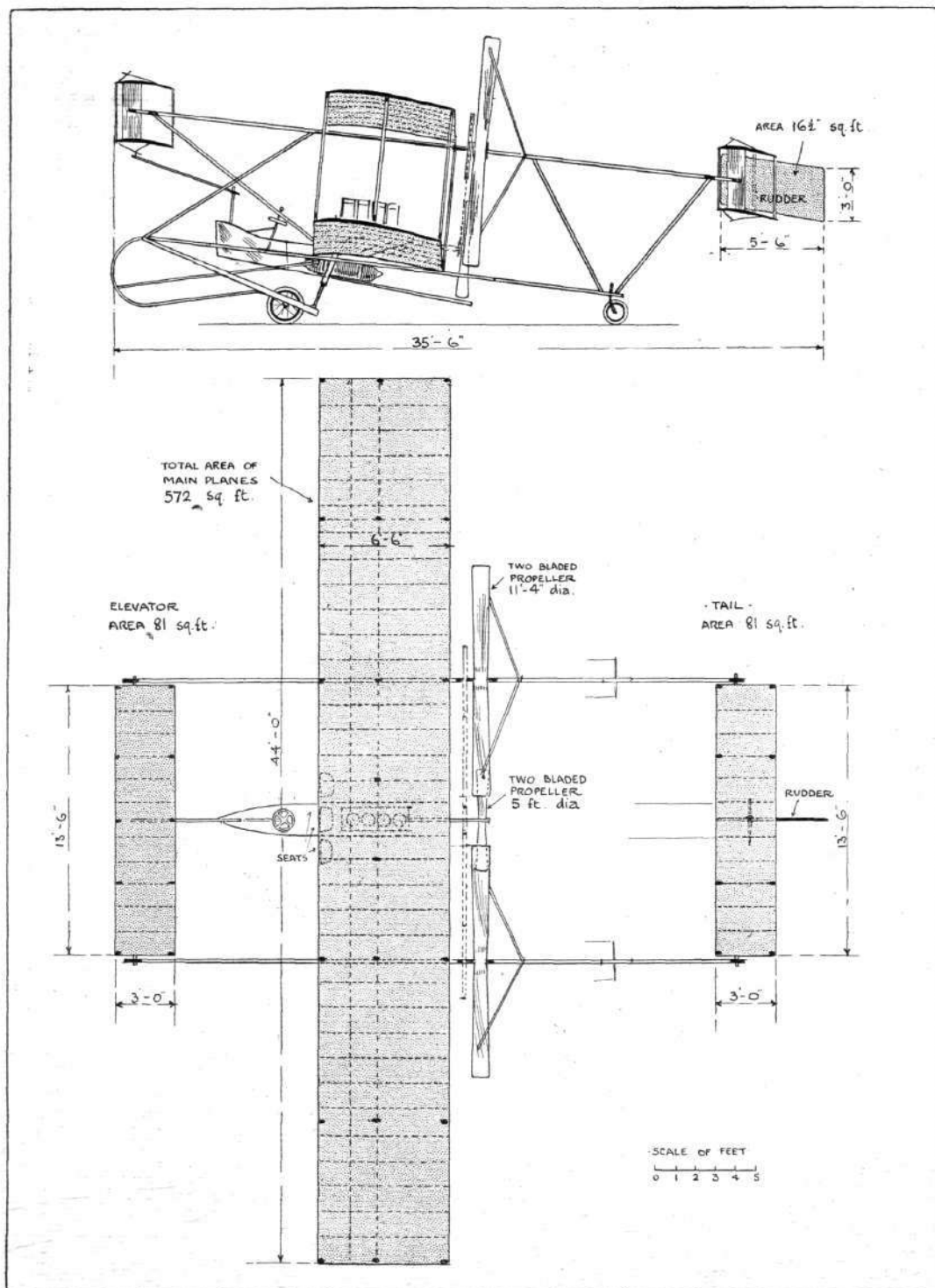


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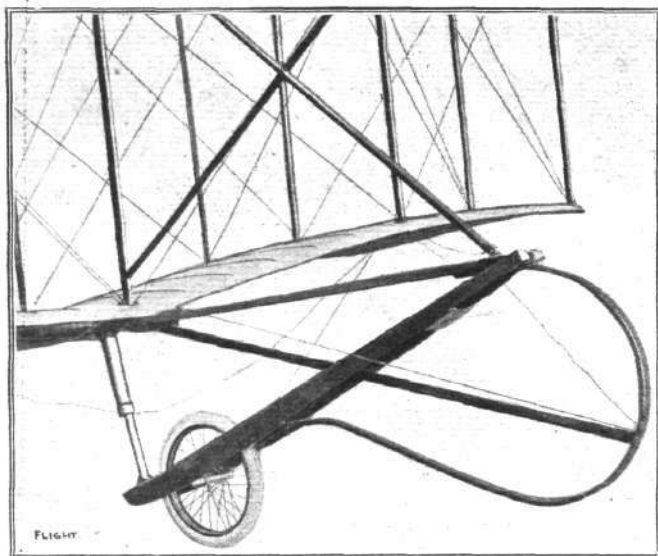
Rear view of the Maxim biplane, showing the disposition of the three propellers. The small propeller runs in the wake of the principal masses.

others and to again take an active part in the development of flight by the construction of another large machine. An account of the leading features of this machine, written by Sir Hiram Maxim himself, has already

of a fore and aft control, which is obtained by the interconnection of a biplane tail with a biplane elevator. The main planes are constructed in three sections. The central section has a straight edge, but the outer sections



THE MAXIM BIPLANE.—Plan and elevation to scale.



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Detail view of the chassis suspension on the Maxim biplane.

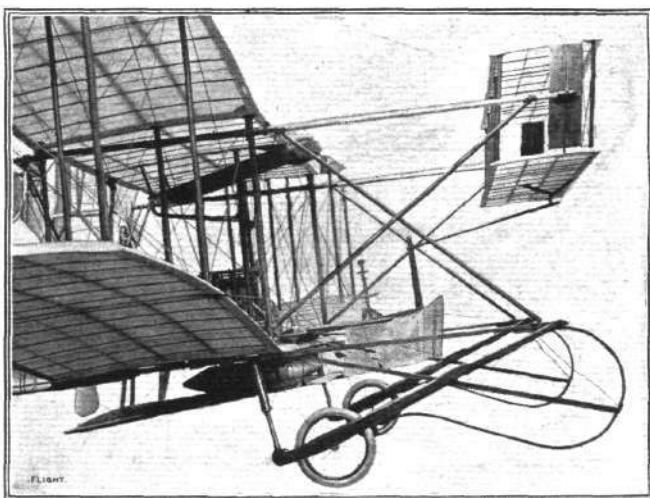
are arched and form dihedral angles with the central section. This disposition of the planes is made for the purpose of introducing a factor of natural stability. The central section carries the engine and the pilot's seat, both being located on the lower deck, so that the centre of gravity is considerably below the centre of lifting effect.

The elevator and the tail are both pivoted to the extremities of two tubular spars that run fore and aft the whole length of the machine. These spars constitute the main members of the framework and are a very important feature of the design. They also carry the propellers and thus save the weight of independent brackets for this purpose. They are built up in three lengths, the central portion being steel and the two outer members being aluminium. The latter are stayed by diagonal struts to the lower deck

of the main planes, and are not, therefore, subjected to any appreciable direct bending strain.

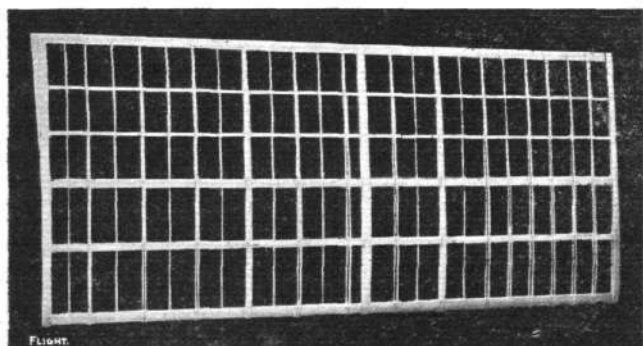
Materials of Construction.

The greater part of the framework of the machine has been made of a fine quality American yellow pine, but there is a limited amount of tubular metal work, and a little hard wood is also used in places. A pair of tubular steel struts are situated in the centre of the main-planes on either side of the engine, and these members have been employed as water pipes to communicate with the radiator, which lies below the upper deck. The machine is mounted upon a pair of pneumatic-shod wheels, which are independently attached to the frame, and together afford a very wide track. Each wheel is mounted on a short axle held by a massive wooden fork, which is hinged to the frame, and attached to a pneumatic spring. Jutting out from the fork is a bow-shaped member of ash forming a fender, which is intended as a protection to the more important parts of the machine in the event of accident. The



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View of the chassis of the Maxim biplane, showing the landing wheels and fenders. The shock is resisted by pneumatic springs.



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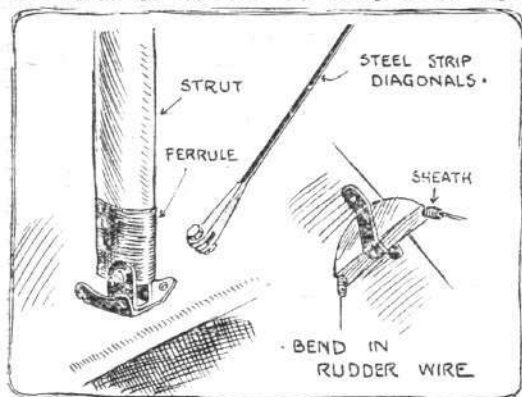
View showing the construction of the framework of the main planes of the Maxim biplane.

tail is supported upon a pair of light wheels mounted on castors that are interconnected with the rudder mechanism, so that the machine can be steered upon *terra firma* at low speeds, when the rudder itself would have but a feeble effect. Immediately beneath the lower deck of the main-planes is an inclined board serving as the support to the petrol-tank, and a protection to the central propeller. It has been so arranged as to afford some lifting effort.

Strip Steel Ties.

An important and interesting feature of the framework is the bracing of the various lattice-girder members by diagonal ties of strip

steel instead of wire. These ties are set edge on to the direction of flight. The main planes have been surfaced with a rubber-proofed Japanese silk, which Sir Hiram Maxim had specially woven for the purpose. It is exceedingly light and very strong for its weight.



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Sketches showing details of the strut-joints, tie-strips, and wire guides on the Maxim biplane.

It is stretched very tightly over the framework of the main planes, and in order to maintain uniform curvature of surface under varying conditions of pressure, the lower surface of each deck is provided with a vent hole so located as to maintain equilibrium of the static pressures inside and outside the deck. The exact position of this air vent has an important bearing on its utility; for the particular camber employed on this machine the



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Sectional sketch of a rib in the main decks of the Maxim biplane.

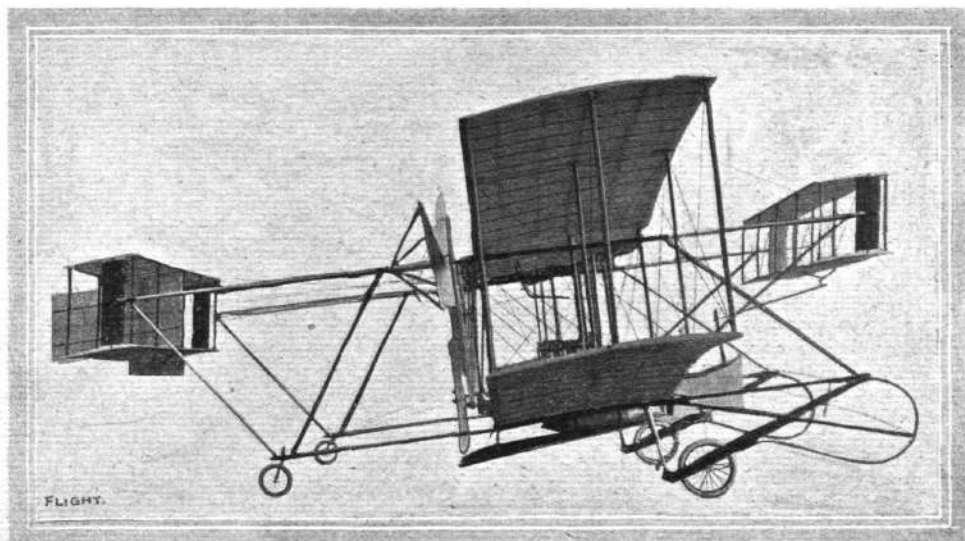


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Photograph of Sir Hiram Maxim at the wheel of his biplane, illustrating the control mechanism.

vents are situated about a quarter of the chord from the trailing edge. The vent holes are about 2 ins. in diameter, and have been covered with fine gauze in order to prevent flies being blown into the cavity.

(To be concluded.)



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Side view of the Maxim biplane, showing very clearly the arrangement of the two principal fore and aft spars that carry the elevator, tail and propellers.

THE LONDON-MANCHESTER

£10,000 FLIGHT PRIZE.

PROBABLY the most talked of man at the moment, not only in Great Britain, but in every part of the civilised world, is Mr. Claude Grahame-White, for although it is true that his attempt to fly from London to Manchester on Saturday last was not successful, it was nevertheless a splendid achievement. We have dealt with the importance of the flight from the national standpoint in our leader this week, so it is unnecessary to elaborate this side of the performance. In the same way it is unnecessary to go into any lengthy details regarding the incidents of the actual journey, as of course our readers are already in possession of these from many points of view. But it is essential that as a matter of history we should place on record the chief facts with regard to this "splendid failure."

It was a cold, cheerless, misty morning on Saturday last, when some 200 people gathered at Park Royal, about five o'clock, to see Mr. Claude Grahame-White start off for Cottonopolis. There was, however, practically no wind, and hopes were raised that a successful trip was to be made. When the aeroplane was wheeled out of its shed everything was ready, the aviator took his seat, and after a short run along the ground steadily in the air without a hitch. The gasometer at Wormwood Scrubbs had been decided upon as the official starting point, that being just inside the five-mile radius from the *Daily Mail* office, and thither Grahame-White steered his Henry Farman biplane. Mr. Harold Perrin, the secretary of the Royal Aero Club, was on the top of the gas-holder, and as the aviator swung round the mark a big flag was waved to signify that the starting-line had been crossed. The actual time of the official start was 5h. 15m. 30s. About 5,000 people had by this time assembled on Wormwood Scrubbs, and they gave the intrepid flyer a rousing send-off. Everything that was available was spread to wave him a parting greeting as he sped along. Crossing Kensal Green Cemetery, he made his way to the L. & N.W. Ry. at Willesden, and thence followed the line to Rugby. As soon as the machine was officially started, Mr. Perrin boarded one of the two White cars which had been placed at the disposal of the Royal Aero Club by Mr. Fredrick

Coleman, and accompanied by two special mechanics of the Gnome Motor Co., the party made straight for Rugby, Mr. Coleman personally driving the White steamer. Mr. Grahame-White was sighted at Fenny Stratford and was kept in view for a distance of fourteen miles. Eventually the R.Ae.C. official car reached Rugby about 10 minutes in front of the aeroplane, and it is interesting to note that the White steamer was the only car present at the start which reached Rugby in time to see Mr. Grahame-White during his halt there of over an hour. The news that he had left London soon spread to Rugby, and so by the time Mr. Grahame-White arrived at 7.20 an expectant crowd, including Mr. Roger Wallace, Chairman of the Royal Aero Club, was awaiting him in the field a few miles out of the town. His arrival invoked splendid enthusiasm, but when he climbed down from his seat the aviator was almost frozen. He had found the cold very trying, but wrapped up in a fur cape lent by Lady Denbigh, and a big muff lent by another lady, he was hurried to a house, and there in a short time, by the aid of a fire and some hot coffee, he was once more in his usual high spirits, and back again in the meadow to superintend the replenishing of the tanks, &c. During this time some Boy Scouts rendered valuable assistance in keeping the crowd back. At twenty-five minutes past eight everything was ready, and Grahame-White once more took his seat. A run of 80 yards was all that was necessary before the machine was again in the air, and skirting the town of Rugby he headed for Crewe.

Unfortunately there were signs that the wind was increasing, and fears were expressed as to how far it might be possible to continue. The report from Tamworth was that he was flying very low, and at Lichfield the cars which were following the flight were stopped, and the officials informed that a descent had been made at Hade-more Crossing, between Whittington and Tamworth, not far from Lichfield. The wind had become very trying, and the motor was not quite up to form, two of the inlet-valve springs having become weak, and Mr. Grahame-White therefore deemed it



Mr. Claude Grahame-White in his place on the Henry Farman biplane ready for starting his big flight on Saturday last.

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prudent to make his second stop before Crewe. Selecting the best looking field within sight he glided down, and after making sure that the motor trouble was not serious he walked over to the railway signal box and telegraphed to Lichfield to stop the following cars.

Unfortunately the spot selected would appear to be a regular "Windy Gap," and all hope of an immediate restart had to be abandoned. As there appeared to be practically no chance of getting under way before sundown, Mr. Grahame-White was induced to have a few hours sleep. In the meantime the wind refused to drop, rather it increased in force, and so everyone went off to bed early with the possibility before them of a call for a night flight. At 2 a.m. on Sunday, however, it was still impossible, and all hope of completing the flight before 5.15 a.m. had to be abandoned. Mr. Grahame-White immediately, however, set about arranging to fly the remaining distance to Manchester, and then make a fresh attempt from there.

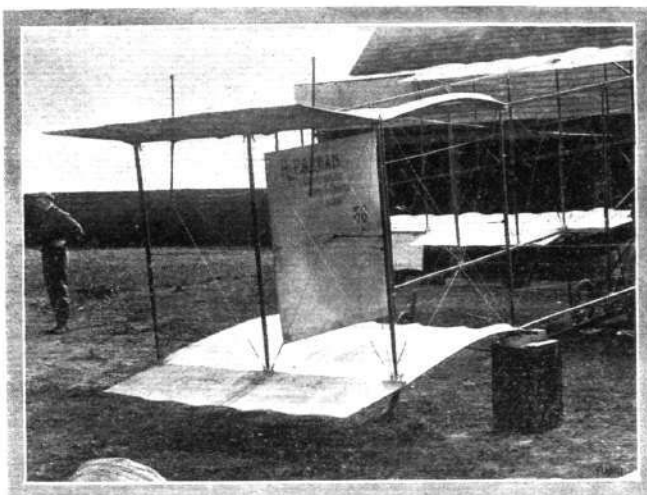
This project, however, was knocked on the head by the unfortunate accident to the machine on Sunday. It had been left out in a field, and Mr. Grahame-White had ordered that it was to be securely pegged down. This precaution was unfortunately neglected, and on Sunday afternoon a sudden gust of wind blew the machine over, doing considerable damage. It became therefore necessary to return with the machine to London, where repairs were put in hand at once, and on Wednesday afternoon it was once more ready for a second attempt.

In the meantime Paulhan, who had arrived at Hendon with his Henry Farman machine, had progressed so well with getting the aeroplane together that he also was at any moment ready to take the air, and if possible snatch the prize from the hands of the British representative, and at the same time forestall M. Dubonnet, who had also hurried back to London with his Tellier monoplane, after having made formal entry on Monday last for flying for the prize. M. Dubonnet's turn to try was down for Monday next.

THE PRIZE WON.

Wednesday Evening.

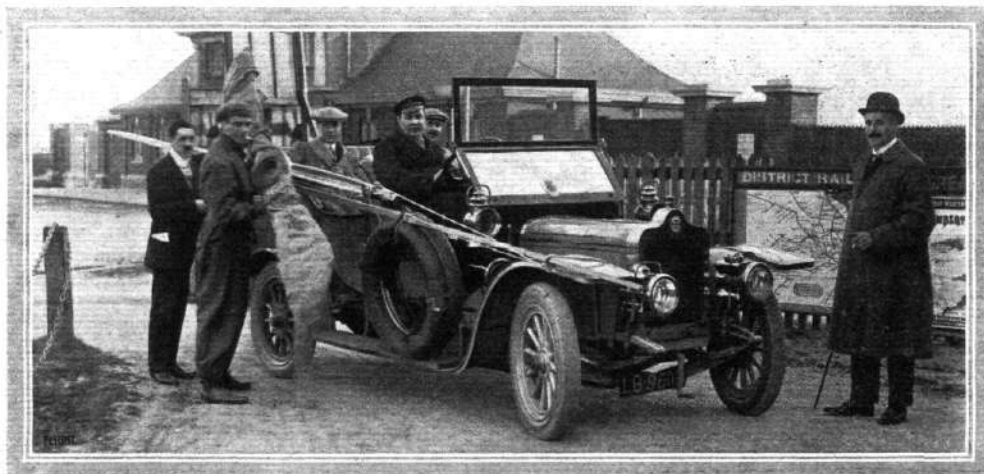
Although M. Paulhan's machine only arrived at Hendon about six o'clock this morning, by dint of unremitting toil he had it assembled at five o'clock in the afternoon, and was then ready for the flight to Manchester. Earlier in the afternoon he had notified the Royal Aero Club to have their observers in readiness, and at



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The tail of the Henry Farman machine used by Mr. Claude Grahame-White for his London to Manchester flight, which it will be seen differs from the Farman machine which was last year dealt with in detail by us. On the very latest Farman a monoplane type tail has been adopted.

5.21 p.m. he took his "jump-off" from Hendon, and made his way towards Hampstead Cemetery, which had been decided upon as his official starting line. Turning there at 5.31 p.m. he steered straight for Harrow, and then kept to the L. and N.W. main line as his guide. Paulhan had arranged for his flight to be followed by a special train, which left Willesden as soon as M^{me}. Paulhan, Mr. H. Farman, and the other members of the party reached there by motor. This train caught up to the aviator just past Weedon, and kept the machine in sight until Rugby was reached, where of course some little delay ensued in getting the special clear of the junction. At Rugby the news was learnt that Grahame-White had started, but it was impossible to communicate this to Paulhan, who passed over Rugby at 7.20 p.m. It was then rapidly getting dark, but Paulhan, still at a good height, flew on until Lichfield was reached when he decided to come down in a field by the Trent Valley Station, at ten minutes past eight, being then 117



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MR. CLAUDE GRAHAME-WHITE'S CROSS-COUNTRY FLIGHT.—One of the "repair cars" ready for leaving Park Royal for Crewe with spare parts. Standing on the left of Mr. Grahame-White (with the propeller) is Mr. Brewer, Manager for Mr. Grahame-White, and by the side of the bonnet of the "Standard" car is Mr. Harold E. Perrin, Secretary of the Royal Aero Club.

miles on his way to Manchester. After seeing the machine safely pegged down, Paulhan went with his party to the George Hotel for the night, intending to make a fresh start at 3 a.m.

At the time Paulhan started, Mr. Grahame-White was getting a much-needed sleep, having decided to postpone his start until early morning, but as soon as the news came through he was awakened, and with characteristic promptness, he decided to set out in pursuit. He had had no opportunity of testing the repairs to his machine, but feeling confident that they were all right, he had the machine started up. It was ten minutes past six when the first report of Paulhan's start was received, and within 10 minutes Grahame-White was in the air, and at 6.29 was officially started on his second attempt to win the big prize. Watford was buzzed by him at 6.50, Boxmoor a quarter of an hour later, Leighton Buzzard at 7.28, and Wolverton at 7.41. There the gathering darkness made it difficult to see the way, and at five minutes to eight Mr. Grahame-White decided to descend in a field by the railway line at Roade, 60 miles from London. There Dr. Ryan offered the hospitality of his house to the aviator, who, like Paulhan, decided to restart at 3 a.m.

THE LAST STAGE.

Thursday Morning.

Grahame-White was the first to start this morning, having determined to make a "night attack," with the object of trying to secure the lead, and was accordingly away before it was quite light, the brilliant

beams from the searchlights of the attendant motor cars also aiding the work of getting ready for the start. At 2.50 the flyer was once more in the air, and forty minutes later had passed Rugby, thereby materially reducing the lead which the Frenchman had gained overnight. Everything appeared to be going well when Nuneaton was passed at 3.50 a.m., but a few minutes after engine trouble began to assert itself, and rendered a descent necessary at Polesworth, 107 miles from London. A few minutes later Paulhan had made his restart from Lichfield, 10 miles further ahead, and while the matters with regard to the engine on Grahame-White's machine were being put right, the news came through that his rival had reached the goal. Then all hope of securing the prize having gone, he decided to take his time about completing the remaining stage, and so went to bed for a few hours' sleep.

Delayed slightly beyond his intended time of starting, Paulhan did not get into the air again until 4 a.m., but his machine ran without a falter. Rugby was passed at 4.25, Stafford at 4.45, Crewe at 5.20, and at 5.32 his machine glided to rest amid a roar of applause from the waiting crowd in the field at Didsbury, two miles from Manchester, and so within the five mile radius of the Manchester offices of the *Daily Mail*, which had been chosen as the official finishing place. And thus, in spite of the splendid work and efforts of Great Britain's representative, Mr. Grahame-White, the great prize passes to a Frenchman, admiration for whose pluck and success is only tempered by a patriotic regret that fortune had not shed its favour more on the Britisher.



Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 26th inst., when there were present:—Mr. Roger W. Wallace, K.C., in the chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. John Dunville, Mr. J. T. C. Moore-Brabazon, Mr. C. F. Pollock, Sir Charles D. Rose, Bart., Mr. Stanley Spooner, and Harold E. Perrin, secretary.

New Members.—The following new members were elected:—
Hon. Walter Patrick Lindsay. H. White Smith.
Lieut. Richard Herbert Rowe, R.A. Henry Howard Walford.

Aviator's Certificates.

The Committee at their meeting on Tuesday, awarded Aviator's Certificates to Mr. G. B. Cockburn and Mr. Claude Grahame-White.

Aero Club de France Aviator's Certificates.

The Aero Club de France has granted Aviator's Certificates to the following members of the Royal Aero Club:—

Capt. Bertram Dickson. Mr. D. Graham-Gilmour.
Lieut. Launcelet D. Louis Gibbs, Mr. W. D. McArdle.
R.F.A.

Baron de Forest £4,000 Prize.

Mr. J. T. C. Moore-Brabazon has entered for the "Baron de Forest" £4,000 Prize, the particulars of which were published in *FLIGHT* of March 19th.

London to Manchester Flight.

At a meeting of the Committee, on Tuesday last, a resolution was unanimously passed conveying the heartiest congratulations to Mr. Claude Grahame-White upon his magnificent achievement on Saturday, April 23rd, 1910, in connection with the London to Manchester flight for the £10,000 *Daily Mail* prize.

A vote of thanks was unanimously passed to Mr. Frederic

Coleman for the loan of two White steam cars which he kindly placed at the disposal of the officials of the Club.

Bournemouth Aviation Meeting.

The Royal Aero Club, in conjunction with the Royal Automobile Club, have arranged to take the Hotel Burlington, at Boscombe, for their respective members during the aviation week. It is a first-class hotel, standing in 7½ acres of ground, which extends almost to the sea. The accommodation has been taken from July 11th to 16th, inclusive. As there is a large demand for rooms, members are requested to make early application to the Secretaries of either Club.

Eastchurch Flying Ground.

Members visiting the flying ground at Eastchurch are requested to have with them their membership cards, as admission to the ground can only be obtained on production of same.

Members wishing to erect sheds are requested to communicate with the Secretary of the Royal Aero Club.

Railway Arrangements.—The following reduced fares have been arranged with the railway company for members visiting Eastchurch:—

1st Class return, 8s.; 2nd Class, 6s. 6d.; 3rd Class, 5s.

Tickets available for one month from date of issue.

Members desiring to avail themselves of these reduced fares are required to produce vouchers at the booking offices. Vouchers can be obtained from the Secretary of the Royal Aero Club. Trains leave Victoria, Holborn, or St. Paul's.

For the convenience of Members, the best train is the 9.45 a.m. from Victoria, arriving at Queenborough 10.55. At Queenborough change to the Sheppey Light Railway for Eastchurch, which is ½-mile from the flying ground.

HAROLD E. PERRIN,

Secretary.

166, Piccadilly.

PROGRESS OF FLIGHT ABOUT THE COUNTRY.

(NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of *FLIGHT*, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.)

Aviation Association of Ireland (HOTEL METROPOLE, DUBLIN).

A PAPER on "Stability" will be read before the above association, by Mr. F. F. C. Trench, on Tuesday, May 3rd, at 8 o'clock, at the Royal College of Science, Dublin. The paper will be followed by a discussion. All intending to join the association are invited to be present, when the secretary will be pleased to give them full particulars.

A model flying competition will be held under the auspices of the Aviation Association of Ireland early in June.

This competition, the first held in Ireland, will be open to any one resident therein, and will be divided into two classes. Class I for "gliders," Class II for "self-propelled machines."

Valuable prizes will be awarded in each class, as well as a special prize for the most meritorious performance.

This latter prize will be confined to machines built by amateurs. Intending competitors should forward their names at once to the Hon. Sec., D. O'E. Gill, 43, Dawson Street, Dublin.

A detailed set of rules will shortly be issued.



Birmingham Aero Club (165, HAMPTON STREET).

THE Board of Trade has registered under the Act of 1909, the Exhibition which is to be held at the Edgbaston Botanical Gardens on May 20th and 21st, so that inventors will be fully protected; further this protection will avail them for six months afterwards, provided a notification is sent to the Comptroller of Patents by the exhibitor.

The last date for receiving entries outside of Birmingham has now been extended to May 14th in compliance with the wishes of several intending exhibitors, who could not be certain of completing their models in time.

Bristol and West of England Ae.C. (STAR LIFE BLDGS., BRISTOL)

THE committee of the Bristol and West of England Aero Club held their first meeting on the 25th inst., prior to which they were entertained to dinner at the Clifton Down Hotel by the kind invitation of the vice-president, Samuel White, Esq., J.P.

Amongst other business, it was decided that the headquarters of the club should be at the Clifton Down Hotel.

The committee also hope to make arrangements whereby the club members and their friends will be able to attend the flying meetings at Huntingdon and Bournemouth.

On behalf of the British and Colonial Aeroplane Co., Ltd., the chairman, Mr. Samuel White, said that his Company would be pleased to provide the club with a glider, and he hoped it would be ready for use in about three weeks' time.

The club membership now numbers nearly 70, and it is expected that this will be considerably increased before the end of May, after which date an entrance fee will be made.

The subscription to the club is two guineas, and all wishing to join are asked to communicate with the honorary secretary, Mr. A. Alan Jenkins.

Hampshire Aero Club (48, PALMERSTON ROAD, SOUTHSEA).

ON Saturday the 23rd inst., the H.Ae.C. had a field day at the aeronautical camp, Fort Grange. In the absence of the President, Mr. Patrick Alexander, the secretary, Capt. Marriot, superintended the operations, in which he was ably assisted by members of the club. Officers and men of the garrisons of Fort Grange and Fort Rowner gave very welcome assistance.

In a breeze of about 20 miles an hour the large glider was very successfully manipulated. There was general improvement in the management, but some pilots were more skilful than others in keeping their balance. After half-a-dozen successful glides had been made, a spar broke, which prevented further experiments.

Mr. Day's monoplane attracted a large concourse of spectators, and the skill evinced in its construction met with very favourable criticism from those able to judge. A limited company is in course of formation to exploit the machine at the Bournemouth Centenary and other meetings, and there is every reason to hope that Mr. Day will have a successful career as an aviator during the current season.

THE WRIGHTS AND THE

LAST week Mr. Cortlandt Field Bishop, the chairman of the American Aero Club, arrived in France with the object of clearing up any misunderstanding, in view of the action in connection with the Wright patents, with regard to the entry into America of any flying machines for the Gordon-Bennett race. He brought a letter, dated April 8th, from the Wright Co., agreeing not to take any legal action against flyers which are imported into the United States solely for this competition, the text of which is as follows:—

"We understand that Saturday, October 22nd, 1910, has been fixed as the date for the holding of the aeroplane contest for the

DUBONNET'S FLIGHT ACROSS PARIS.

ALTHOUGH Count Lambert's exploit in flying round the Eiffel Tower some months ago electrified Paris, the Gay City had a greater thrill on Saturday last when M. Dubonnet flew right across the city.

Starting from his flying ground at Draveil, near Juvisy, at two minutes past three, M. Dubonnet followed the course of the Seine to Paris, then passed over the Place de la Concorde and the Avenue

Record in Aerial Inventions.

ACCORDING to the annual report of the Comptroller of Patents, 1909 will be remembered as a year in which inventions in connection with flying machines were plentiful, three times more patents on such matters being applied for than in the previous year. The majority of them related to the balance and control of aeroplanes.

Kite and Model Aeroplane Assoc. (27, VICTORY RD., WIMBLEDON)

ENTRIES close on Wednesday next for the four competitions to be held on Wimbledon Common, next Saturday afternoon, commencing at 2 o'clock. The first competition will be a longest flight competition, open to all models made in the British Empire, and the first prize will be a challenge trophy and gold medal, with silver and bronze medals for the second and third. A maximum of 100 marks each will be given under the headings of longest flight and general stability, and 50 marks for models starting solely under their own power. The rules are:—

1. Competitors may submit models of any kind.
2. Competitors must be at the Judges' flag (near the Windmill) at 2 o'clock. Those not present at that time will be disqualified.
3. Stability, both longitudinal and lateral, will be noted by the Judges and taken into consideration in their award.
4. Models may be started by hand, or in any other manner. In no case may models be started at a greater vertical height than 5 ft. above the ground.
5. Each competitor is entitled to three trials.
6. The Judges in their discretion, and solely for the determination of the stability of the model, may order an additional trial.

There will also be contests for models driven by any power other than elastic, a steering competition, and a competition for youths for longest flight for prizes given by the Aerial League. In all competitions members pay no entrance fee, but in the first and second non-members pay 2s. 6d., and in the other two 1s. In the steering competition the flights embrace flights in a straight line, and circular flights to right and left; the maximum award for each being 100 marks.

Liverpool and District Ae. Soc. (1, EXCHANGE STREET WEST).

OWING to the fact that he has now left Liverpool, Mr. J. R. Wright has resigned the secretaryship of the Liverpool and District Aeronautical Society, and Mr. C. J. Priest, solicitor, of South John Street, Liverpool, has been appointed to take over the position.

Scottish Aeronautical Society (185, HOPE STREET, GLASGOW).

THE first annual general meeting was held on Wednesday, April 27th, at 207, Bath Street, Glasgow, and the annual report showed that a great deal of useful work had been done. A large workshop has been rented at 46, Ashton Lane, Hillhead, and fitted up with the necessary machinery for the building of aeroplanes, and the construction of a glider is being actively pushed forward. Arrangements have been made for the erection of a pavilion, given by one of the members, at the Scottish Exhibition next year, and this will be filled with aeronautic exhibits. There are now on the roll 59 ordinary members, 7 associate members, and 4 life members; and arrangements are being made for suitable accommodation in the way of lecture and reading rooms.

GORDON-BENNETT CUP.

Bennett trophy, and appreciating the international spirit of the contest as well as the factor of success due to the pilot in charge of the aeroplane, this Company consents that representatives of all foreign countries may compete in such contest without regard to the character of the aeroplane used; such consents however, to be given in such form as not to constitute waivers or admissions for or against this Company or the contestant.

"THE WRIGHT COMPANY,

"WILBUR WRIGHT, President."



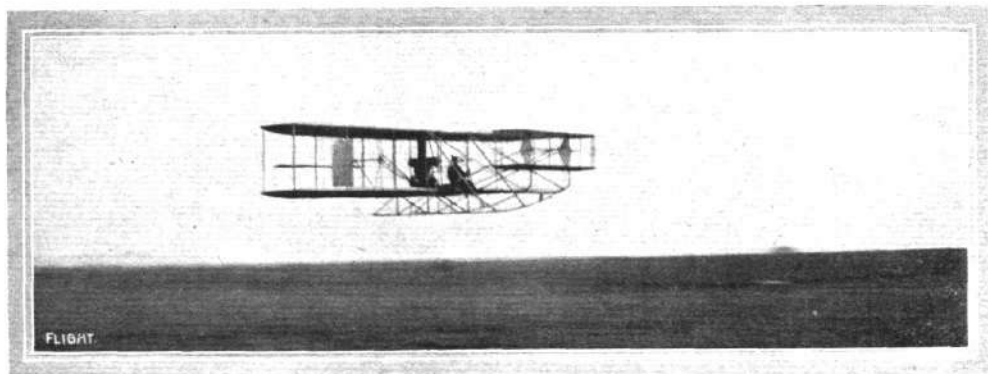
An Aeroplane Factory for Beccles.

AT a meeting of the Beccles Town Council last week, it was reported by the Mayor that a London aviator has leased 7 acres of land for an aeroplane factory, the construction of which had actually been commenced. A hope was expressed that Beccles might become a Government aeroplane station.

BRITISH FLYERS AT SHEPPEY AND ELSEWHERE.

IN addition to the pictures of Mr. Claude Grahame-White's splendid achievement, this week we publish a series of photographs of

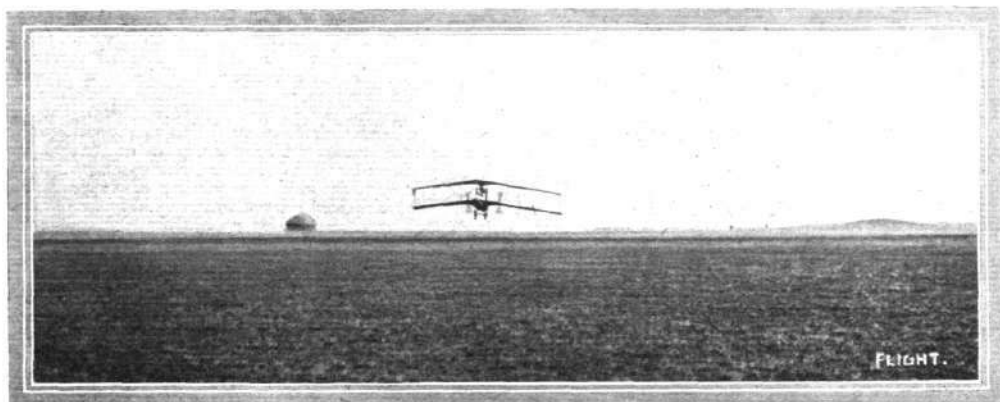
thinking men, who have been and are content to persevere in quiet seclusion in their efforts to evolve flying machines which shall be an



BRITISH FLYERS AT SHEPPEY.—Mr. Cecil S. Grace during one of his numerous flights on his Short-Wright machine at Eastchurch.

British aviators flying on British-built machines—all of which we believe are now on record for the first time. Down at Eastchurch

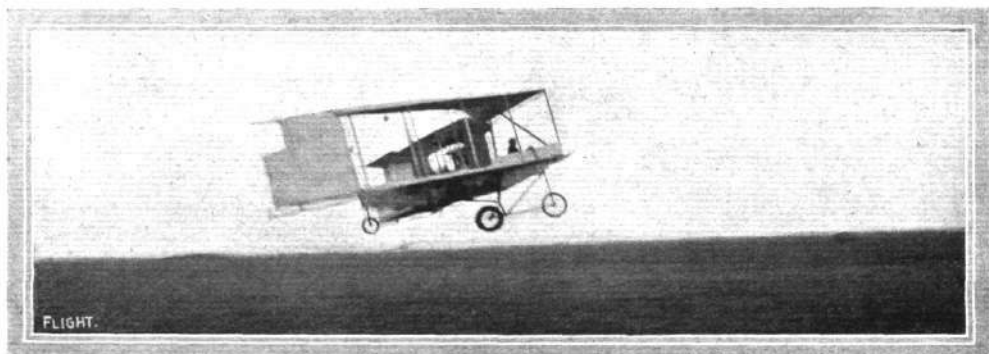
advance upon the hitherto accepted ideas in aviation. That success is being gradually achieved there is considerable reason to



BRITISH FLYERS AT SHEPPEY.—Mr. Dunne in full flight on his Dunne biplane. The machine is travelling towards the spectators.

and Shellbeach in the Isle of Sheppey, the flying grounds of the Royal Aero Club, very earnest work has been put in by a number of

hope, as the departure in design in several instances is showing very promising results. Our photographs give ocular demonstration of



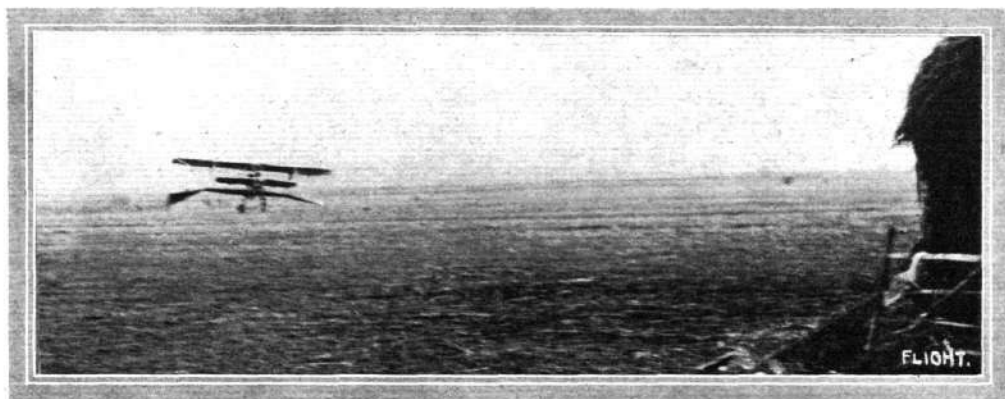
BRITISH FLYERS AT SHEPPEY.—A side view of Mr. Dunne in flight.



BRITISH FLYERS AT SHEPPEY.—Professor A. K. Huntington's biplane seen from the front.

some of the new machines in flight, including as they do Mr. Dunne's and Professor Huntington's very original biplanes. Mr. Cecil S. Grace, on his Short-Wright machine, is also seen in the air, upon one of his many long flights at Sheppey, whilst we have already published several photographs of Mr. Moore-Brabazon and the Hon. C. S. Rolls in flight upon their respective machines

Further Mr. Claude Grahame-White's aviation school—for the hero of to-day is not only a good sportsman but a keen business man—as well as a Bleriot school, will shortly be in full swing near London, when there is little doubt that the ranks of British flyers will swell very rapidly, as has been the case abroad, where such greater facilities have been accorded to enthusiasts in the new art.



BRITISH FLYERS AT SHEPPEY.—Professor A. K. Huntington's biplane in flight.

during the past few months. With Mr. Stuart Ogilvie making steady progress on Camber Sands, Mr. Bradley at Huntingdon, the Hon. Alan Boyle and others at Brooklands, Mr. Cockburn at Salisbury Plain, in addition to men who have already won their laurels in public, like Mr. Rawlinson, Mr. A. V. Roe, Mr. S. F. Cody, Capt. Dickson, Capt. Dawes, Mr. Gibbs, Mr. Somers Somerset, Mr. D. G. Gilmour, Mr. MacArdie, &c., a very good commencement has been made for the advancement of the sport at national meetings this year.

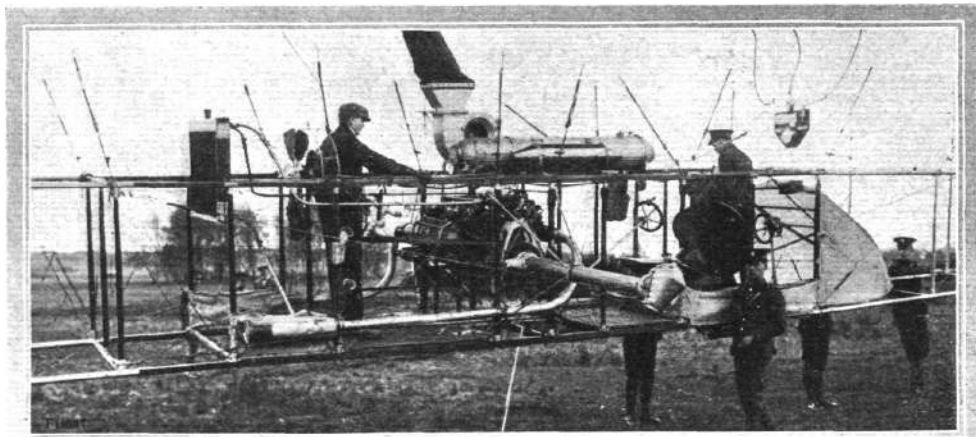
Mr. Grace at Eastchurch.

LAST week the weather at Eastchurch was against flying, but whenever there was a calm Mr. Cecil S. Grace was out on his Wright flyer, and in this way made several trips lasting a quarter of an hour or so. On Tuesday of this week Mr. Grace was out and made some fine flights during the day. It is worth noting that Mr. Grace's machine is a Wright machine in every detail as when first supplied, no alteration having been made as regards the engine, &c.



BRITISH FLYERS AT SHEPPEY.—A side view of Professor A. K. Huntington's machine.

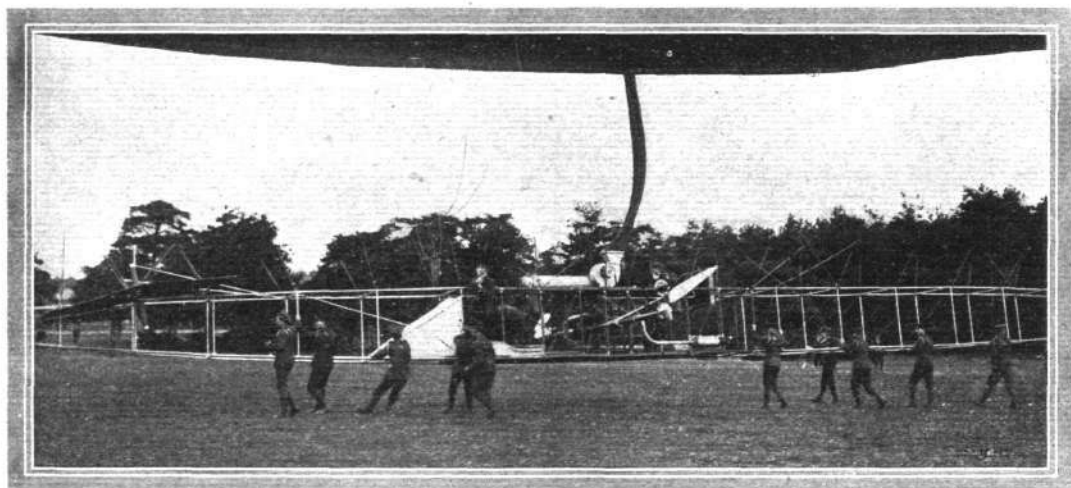
BRITISH ARMY AIRSHIP.



A near view of the "engine room" on "Dirigible No. 2." This clearly shows the arrangement of the propeller-shaft which permits of the propeller being turned round so as to assist the ascent or descent of the vessel, and thus avoid the loss of ballast. The instrument board will be noticed at the forward end, and also the fan, causing a powerful draught to pass through the radiator.

THE new Army dirigible was considerably damaged on Monday last. A series of trials on Wednesday of last week revealed several slight defects, and after the tests the vessel was placed in the new dirigible shed, which is now nearly finished. There the engines

pulled and the envelope deflated. It was then packed up and taken into its old quarters. The framework was damaged in one or two places, but it is hoped that everything will be repaired in a day or two.



Another view of the mechanism of the new Army dirigible in which can be seen the forward elevating planes and the navigating officers ready to direct the ship as soon as the human "anchors" cast off.

were taken out and on Monday it was decided to take the dirigible out and conduct experiments as to the force of the wind. Great difficulty was experienced in holding the lightened balloon down, and one gust of wind caused the vessel to roll and pitch very badly. As it was feared it might tear itself away the ripping cord was

During the trials last week the action of the adjustable propellers in assisting ascending and landing operations was tested, and also the strong south-westerly breeze provided an opportunity of noting the airship's behaviour in a wind. Altogether, about six miles were covered in small circles and zigzag courses.

Houdini Flying in Australia.

WRITING from Melbourne, Mr. Harry Houdini sends us details of some flights he has made on a Voisin biplane, at Digger's Rest. Three short flights, the longest of 3½ minutes' duration, were made on the 18th ult., while on the 21st ult. a flight of six miles in 7 mins. 37 secs. was accomplished, and during this he rose to a height of between 90 and 100 feet. Altogether up to this date Mr.

Houdini had made twelve short flights of varying duration, and he claims to be the first flyer in Australia. He says the reports with regard to Mr. Defries' flights on a Wright flyer were very much exaggerated, and he never did anything more than a long hop. Since then Mr. Defries' machine has been tried by Mr. R. Banks, who came down suddenly from a height of 20 feet and smashed the machine.

THE "ALVASTON" FLIGHT MOTORS.

SOME very interesting results have been obtained by the manufacturers of the Alvaston petrol motors from tests carried out at the Derby factory, where they are manufactured. Apparently, in fact, an exceptional degree of freedom from vibration has been secured by taking full advantage of the horizontal opposed principle of con-

struction by the pistons when at the end of their outward strokes. And equally clear, too, is the disposition of the external two-to-one gear for operating all four valves through a single pair of push-rods, as well as the high-tension Simms magneto, and the carburettor seated above the top of the crank-chamber.

Water jackets are formed for each cylinder casting, and not only are the cylinders ground out true to size, but the inside surface of the combustion-chamber heads are machined internally, thereby permitting high compression to be employed, as well as ensuring a thorough balance between the two cylinders. Large inlet and outlet ways are provided by the nickel steel valves, and in order to secure long life for the valve-gear, the push-rods are ball-jointed with hardened and ground bearing-surfaces. Equal importance, moreover, has been laid upon first-rate materials and workmanship in connection with the crank-shaft and its bearings, the shaft itself being formed of a one-piece chrome-vanadium forging, subsequently bored out hollow, while the main journals are carefully ground so as to bed-in truly to the special phosphor-bronze main bearings. Provision is made for taking the thrust imposed by a tractor-propeller if fitted direct to the shaft, for there is a Hoffmann ball thrust collar on the inside of the crank-chamber for this express purpose.

The illustrations that we give herewith relate more particularly to the 30-h.p. model, though motors of a similar design, both of 20-h.p. and of 40-h.p., are included in the standard series. That illustrated has a bore of 132 mm. ($5\frac{3}{8}$ in. approx.) by 127 mm. (5 in.) stroke, and as shown in Fig. 1, its weight is 113 lbs. As regards the 20-h.p. model, the bore and the stroke are both 114 mm. ($4\frac{1}{2}$ in. approx.) while the bore of the 40-h.p. is 155 mm. with a stroke of 150 mm.

struction to produce a high grade design of extreme lightness and yet of ample strength for the required purpose.

As may be observed from our first illustration, there is nothing radically novel about the general arrangement of the parts, inasmuch as the two horizontal cylinders are mounted on opposite sides of the central crank-chamber, and the valves are arranged in the cylinder-heads. Earlier practice is, moreover, followed in that a two-throw crank-shaft is employed in order to secure a good balance of the moving parts. But, firstly, it may be noticed that four steel rods are employed for securing the cylinders in place, and that these rods—which are of vanadium steel—are so disposed that not only do they relieve the cylinders and the crank-chamber of any severe strains, but that they also serve as a means for fixing the engine in place in the finished machine that is to derive its propulsive power from the engine. A pair of special bridge-pieces lie across the cylinder-heads, and are threaded over the bolts in question, while these bridge-pieces, moreover, carry the simple valve-operating mechanism whereby a single rocker serves to operate both the inlet and the exhaust-valves.

Our illustration also indicates that auxiliary exhaust-ports are provided in the cylinder-walls, where they are

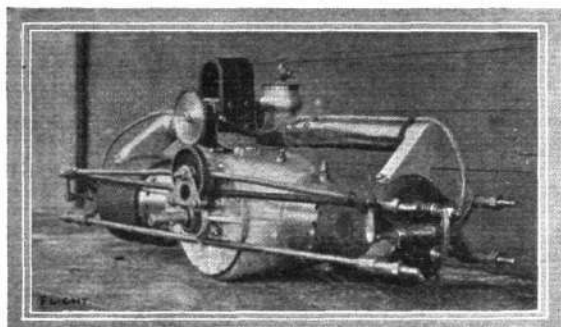


Fig. 1.—The above 30-h.p. Alvaston petrol engine has cylinders of 132 mm. bore by 127 mm. stroke, and weighs, as shown, about 113 lbs.

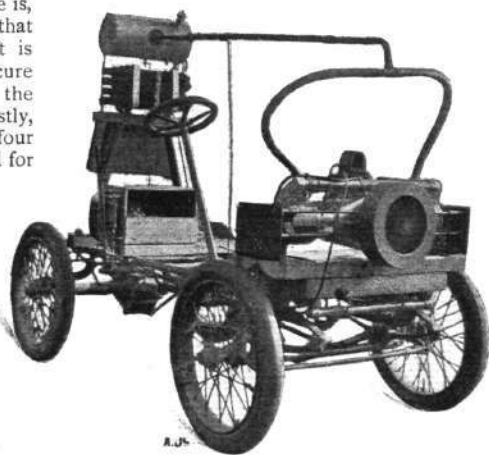


Fig. 2.—An Alvaston engine on a testing chassis, driving a 5 ft. 6 in. fan at a speed of 1,500 revs. per min. A 3-second exposure was given to this photograph.

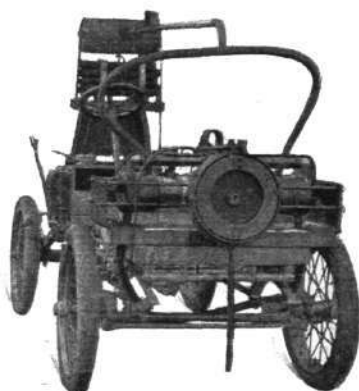


Fig. 3.—A 30-h.p. Alvaston motor, fitted with its prony-brake on the Company's test chassis.

Both our second and third illustrations represent a light testing chassis which has been equipped for running these engines under load out in the open, and it will be realised that the conditions thereby attained are quite different to what would pertain on an ordinary test-bench. In spite of that, and despite the further fact that a 3 sec. exposure was given when the photographs were

taken, the engine in each case was running at a speed of 1,600 r.p.m. An admirable idea is thus conveyed of the remarkable freedom from vibration, even at so high a rate of rotation. In Fig. 2, it will be observed that quite a sharp outline is possessed by the bulk of the mechanism, though such is the speed of rotation that the 5 ft. 6 in. air brake which was bolted to the fly-wheel at the time is quite invisible except for the slight blur near the centre of the fly-wheel. In Fig. 3 a corresponding test is shown in progress, but in this case a prony brake is arranged around the fly-wheel, so as to take the brake-horse-power. Incidentally, it may be added that at that time and from the particular engine which happened then to be under trial, a steady pull of about

46 lbs. was obtained at a radius of about 28 ins. from the centre of the shaft at a speed of 1,600 revs. per min.; in other words about $32\frac{1}{2}$ b.h.p. was developed.

It will, of course, be understood that the cooling apparatus, and in fact, the fly-wheel also, which are visible in Figs. 2 and 3, only constitute a part of the temporary arrangements for the factory tests prior to the erection of the engines and their despatch to customers. In cases where propellers are fitted direct to the crank-shaft those propellers are intended to serve as fly-wheels; whereas, when an indirect drive, as for instance, by a chain, is arranged for, then the Alvaston Motor Co. fit a built-up steel fly-wheel of a special kind upon these engines.

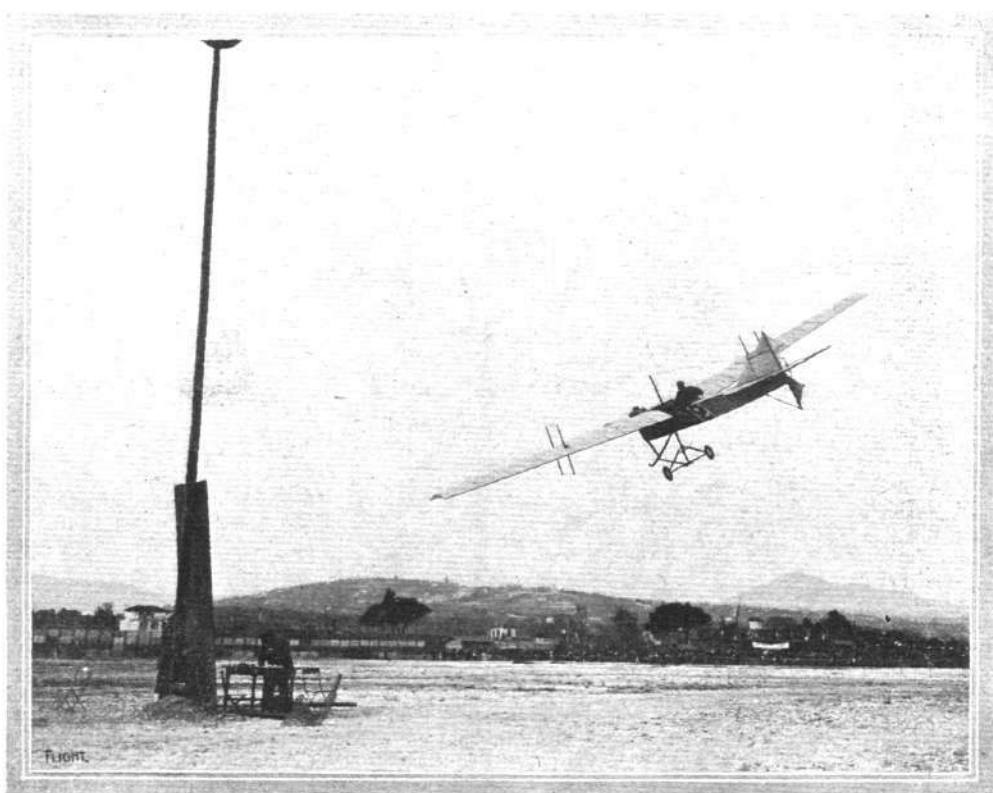


THE NICE MEETING.

In our last issue we were able to deal with the flying up to Tuesday evening, and we now chronicle the outstanding features of the flying on the remaining days of the week.

Seven flyers were in the air at various times on Wednesday, and Efimoff as usual accomplished the longest aggregate distance, his total being 135 kiloms., while Latham and Rolls, who were next, covered 87 and 82 kiloms. respectively. The sensation of the day was some high flying. Metrot on his Voisin led the way, and rose to an altitude of 510 metres, while Latham followed but did not venture quite so high. Efimoff reached about 400 metres, this being above his usual level, and at that altitude he and Latham flew in company for some time. The Hon. C. S. Rolls also reached a height of 400 metres during a trip in the evening. Thursday saw five of the competitors trying for the altitude prizes,

and as was anticipated, Latham outstripped everyone with a flight at 656 metres, but Chavez, who was second, was only 12 metres lower. The Hon. C. S. Rolls was third with 242 metres; Metrot fourth, 231 metres; and Olieslaegers fifth, 217 metres. Mr. Rolls made a flight lasting 1h. 4m. 2s., and in the total for the day he was second with 64 kiloms.; Efimoff being first with 68 kiloms. Van den Born flew for 20 minutes with a passenger over the sea. On Friday Van den Born did most flying, traversing altogether 151 kiloms., and Latham was next with 91 kiloms. In the speed contest Latham was best, his time being 5 mins. 41½ secs.; Duray taking second place with 6 mins. 4½ secs. Having got his machine repaired Herr Grade flew for 4 kiloms. The Hon. C. S. Rolls, Chavez, and Efimoff also made good long flights. Saturday was devoted to the over-sea course from Nice to Cap Ferrat and



Latham, on his Antoinette, rounding one of the mark posts during his winning flight for the Grand Prize for the best circuit at the Nice Aviation Meeting.

back, a distance of 24 kiloms., and in this Latham was easily the winner in 16 mins. 46½ secs., while second place went to the Hon. C. S. Rolls, whose time was 18 mins. 24½ secs. Duray was third in 18 mins. 36 secs., and Van den Born fourth 19 mins. 58½ secs. The other competitors were Efimoff, Chavez, and Metrot, while Reimsdyck also started but fell into the sea, from which he was rescued unhurt. On the total flying for the day the Hon. C. S. Rolls was first, as he twice went over the sea, the other competitors contenting themselves with one trip. Sunday, the last day of the meeting, was also devoted to flights over the sea from Nice to Antibes and back, a distance of 27 kiloms., and in this Latham was first in 20 mins. 16 secs., while Efimoff was second in 20 mins. 44½ secs. The other times were:—Duray, 21 mins. 40½ secs., Chavez, 23 mins. 39 secs., Rolls, 24 mins. 42½ secs., Metrot, 31 mins. 49½ secs. Mr. Rolls made two further attempts to better his time without success, while Latham, Efimoff and Chavez also had another try. In a third trial Latham came down into the sea, but was quickly rescued. The Hon. C. S. Rolls flew the longest distance during the day. Summarised, the leading results of the meeting are as follows:—

Prizes for Greatest Cumulative Distance Flown.

1. Efimoff (Henry Farman)	960.398	kiloms.
2. Van den Born (Henry Farman)	606.336	"
3. Chavez (Henry Farman)	440.330	"
4. Rolls (Wright)	421.718	"
5. Latham (Antoinette)	391.224	"
6. Duray (Henry Farman)	82.586	"
7. Olieslaegers (Blériot)	81.448	"
8. Metrot (Voisin)	80.162	"
9. Rawlinson (Henry Farman)	20.8	"
10. Grade (Grade)	12	"
11. Rougier (Voisin)	9.584	"

Longest Distance without Landing.

1. Efimoff (Henry Farman), in 1h. 15m. 55½s. ...	97	kiloms.
2. Van den Born (Henry Farman), in 1h. 58m. 18½s. ...	87.508	"
3. Rawlinson (Henry Farman), in 1h. 37s. ...	76	"

Spzed Prize (5 kiloms.)

1. Efimoff (Henry Farman), 5m. 23½s.

Passenger Prize.

1. Van den Born (Henry Farman), in 1h. 10m. 22s. 62.708 kiloms.
2. Efimoff (Henry Farman), in 1h. 18m. 51½s. 58.500 "

Tour of the Track Prize.

1. Latham (Antoinette) 5 m. 36½ s.
2. Chavez (H. Farman) 6 m. 2½ s.

Starting Prize (without Passenger).

1. Efimoff (H. Farman) 10.50 metres

(With Passenger).

1. Efimoff (H. Farman) 11.65 metres

Height Prize.

1. Latham (Antoinette)	656	metres
2. Chavez (H. Farman)	644	"
3. Rolls (Wright)	242	"
4. Metrot (Voisin)	231	"
5. Olieslaegers (Blériot)	217	"

The prize money was distributed as follows:—

Efimoff, H. Farman biplane, Gnome motor, Bosch magneto	77,547	65
Latham, Antoinette monoplane, Antoinette motor	60,547	65
Van den Born, H. Farman biplane, Gnome motor, Bosch magneto	27,214	25
Duray, H. Farman biplane, E.N.V. motor	19,457	65
Chavez, H. Farman biplane, Gnome motor, Bosch magneto	15,547	60
Rolls, Wright biplane	6,047	60
Rawlinson, H. Farman biplane, Darracq motor	2,000	00
Metrot, Voisin biplane, E. N. V. motor, Continental fabric	1,547	60
Total	210,000	00

AVIATION NEWS OF THE WEEK.

The First Bristol Aeroplane.

ENQUIRIES at the offices of the British and Colonial Aeroplane Co., at Bristol, elicited the news that the first aeroplane was to be ready for flight to-day, Saturday. Duray, who made several good flights at Nice on a Henry Farman machine, is to be the pilot, and hopes to give exhibition flights at Huntingdon during Whitsun week.

An All-British Monoplane at Sunderland.

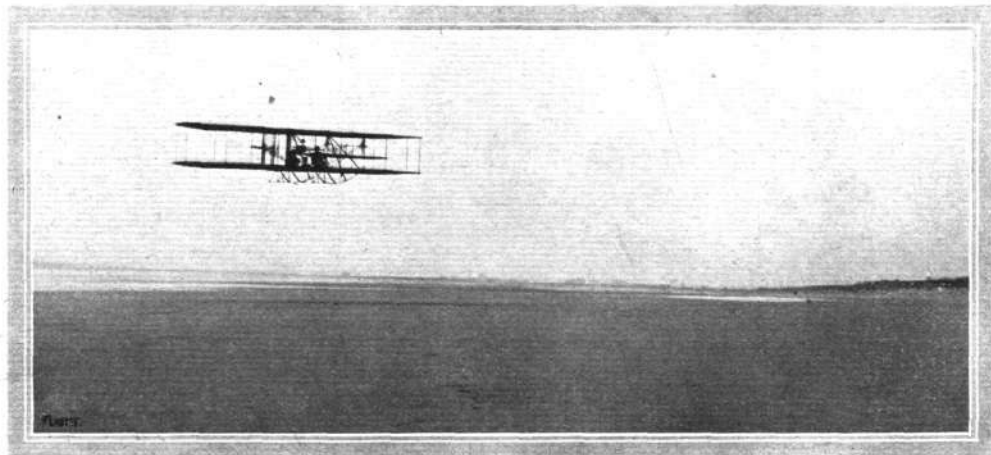
A MONOPLANE embodying several novel features has recently been constructed by Mr. Robert Welford and his two sons at North Hylton, Sunderland. The main plane is of 29 ft. span, and has a chord of 6 ft., while the elevating plane and the tail are each 6 ft.

by 3 ft. At each end of the main planes there are ailerons for the purpose of maintaining stability. It is hoped that trials will shortly be carried out over the Boldon Flats.

No Aeroplane for the Antarctic.

CAPT. SCOTT was entertained by the citizens of Bristol on the 21st inst., and Mr. S. White, on behalf of himself and his brother Sir Geo. White, took advantage of the occasion to offer to the Antarctic explorer an aeroplane for use in connection with his next expedition.

Capt. Scott replied that he heartily appreciated the generosity of the offer, but he rather thought the problem was one the expedition ought not to enter upon, although the possibilities were most interesting.



Mr. Stuart Ogilvie flying on his Short-Wright biplane over Camber Sands.

Four on an Aeroplane.

GRADUALLY but surely the capabilities of the aeroplane as regards weight-lifting are being evidenced in an extraordinary way. When Henry Farman at the Rheims Meeting last year carried two passengers besides himself on his machine it was deemed a splendid achievement, but Sommer at Mouzon on Wednesday of last week completely put this in the shade by flying with three passengers, one of them a lady. True, the flight was only a short one of five minutes' duration, but during that time he passed over the village of Remilly. The weight carried during the five-mile trip was

M. Sommer ...	= 138 lbs.	Machine complete with	
Mdlle. Dutrieux ...	= 102 "	motor and petrol ...	= 550 lbs.
M. Colombo ...	= 138 "		
M. Frey ...	= 132 "		1,060 "

Legagneux at Mourmelon.

SEVERAL very fine flights have recently been made by Legagneux at Mourmelon on his Sommer biplane. On the 20th inst. he flew for an hour and a half, during which time he sometimes reached a height of 150 metres, passing over Buoy, Louverey and the country round the camp. On the 21st he made a flight of 40 minutes, and rose to a height of close on 400 metres.

Mdlle. Dutrieux Carries a Passenger.

HAVING mastered the details of her Sommer biplane, and made several short quarter-hour flights by herself, Mdlle. Dutrieux, on the 20th inst., flew with a passenger for about six minutes over the Douzy fields near Mouzon. This "aviatress" hopes to take her machine to Russia soon and give exhibition flights there.

Gliding for Two Miles.

SPEAKING subsequently of his cross-country flight from Chevilly to Mourmelon last week, M. Paulhan said that he was at a height of 2,000 ft. when he saw his landing place at Arcis-sur-Aube in the distance. He switched off the motor, and glided down to earth in a distance of something under two miles.

Things Quiet at Pau.

PAU is now practically deserted, but a few of the Blériot and Antoinette pupils remain. Maasdyck has been continuing his practice on his Blériot two-seater, and on the 19th he flew for 10 kiloms. Mumm on his Antoinette on the following day covered 18 kiloms. during 13 minutes, sometimes being at a height of 150 metres.

Doings at Mourmelon.

The Farman School.—Chenret and Oullerot, two of the latest Farman pupils, successfully qualified for their pilot's certificates on the 20th inst., and Capt. Dickson made two good flights with two passengers, Count Gleichen and Mdlle. Vix. The same day, Mr. Henry Farman returned to Chalons Camp and recommenced tuition of several pupils. The following day, Lieuts. Fequant and Bruneau passed for their certificates, and Tetard flew for 25 kiloms. On the 23rd Fequant flew for 35 mins., and Bruneau for 25 mins., while Jullerot flew for 22 mins. Other pupils who

have made good flights are—Mme. Frank, MM. Martinet, Landser, Lebedeff, Cammarto, Chowade, Somerset, Tetard and N. Kinet.

The Antoinette School.—Wachter, who is now instructor with Kuller at the Antoinette School, has been giving daily lessons to Labouchere, Gobe, Doriginski, Jost, Bellenger, Cuse, and Mdlle. Marvignt. On the 23rd inst. he flew for 20 mins., while on the previous day Kuller was up for half-an-hour, while on the 25th he covered about 180 kiloms. while giving lessons to seven pupils.

The Blériot School.—Several flyers are now at the Blériot School at Chalons, and on the 23rd inst. Hubert circled twice round the camp, while Barbier flew round ten times. Morane has also made several good flights.

M. Deutsche Offers Another Prize.

ONCE again M. Henry Deutsche de la Meurthe has offered a generous prize for aviation. This time it is a challenge cup of a value of £400 to be awarded by the Aero Club of France for some aeroplane record made by a French aviator and in France. The rules are now to be drawn up by the Aero Club of France.

A New Monoplane.

VERY satisfactory trials were made at Issy on the 22nd inst. with a new monoplane built for M. Charles de Langhe from the designs of M. Tambarly. Several times the owner flew for 50 metres, and made one or two turning movements quite easily. The main planes have a span of 8'5 metres, and that is also the overall length of the machine, which has a lifting surface of 16 sq. metres. It is fitted with a 3-cyl Anzani motor driving a double-bladed propeller.

More Pilote-Aviateurs.

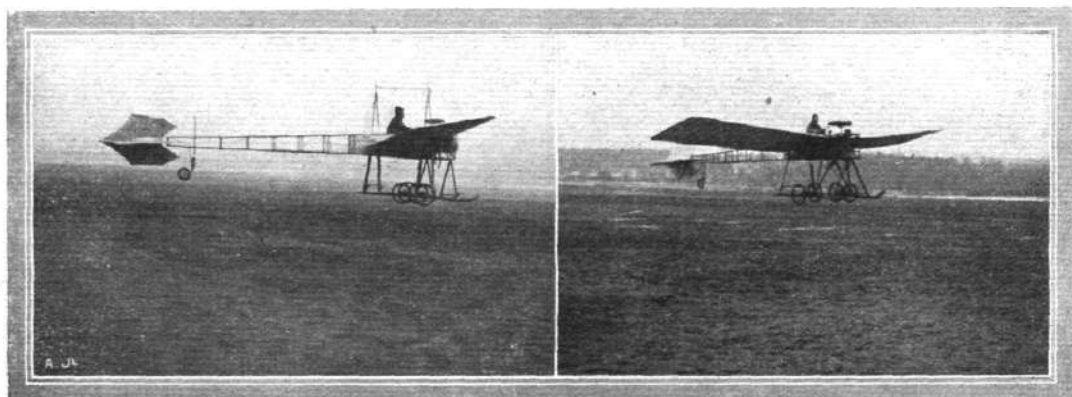
It is indicative of the recent progress in flying that, at the last meeting of the Committee of the Aero Club of France, ten pilote-aviateur certificates were granted. The successful applicants were: MM. Baratoux, Popoff, Wiesenbach, Louis Bréguet, Wachter, Léon Morane, Legagneux, René Toussin, Mollien, Walter de Mumm.

The First Flying "Race."

THE first flying event in which the competitors will actually race against each other is fixed to take place in connection with the Anjou meeting on June 7th. The course will be from Angers to Saumur, a distance of 45 kiloms., and the competitors will be started at intervals of five minutes each, and the finishing times will be adjusted accordingly. The finishing line will be between two posts set up in the Breil prairie near by Saumur.

Spanish Crowds and Flying.

FROM the accounts which have come to hand from Madrid and Bilbao, it would seem aviators would be well advised to keep clear of Spain. On the 25th inst. Gaudart had arranged to give some exhibition flights at the Chamartin de Larosa aerodrome at Madrid, but, owing to the strong wind, he declared it was impossible to fly. At this the crowd commenced to hurl stones, and in order to try and appease them he attempted to fly. He, however, fell from a height of 20 ft., and then the spectators threatened to lynch him, and he was only rescued by the civil guard. The aeroplane suffered considerably.



The Hon. Alan Boyle was last week seen in a photograph, published on page 306, flying on the "Avis" monoplane—obviously not a Blériot, as appeared by a slip in the inscription. Above we are now able to give two much clearer pictures of this successful British-built machine in full flight at Brooklands under the direction of Mr. Boyle. The builders of the "Avis" are the Scottish Aeroplane Syndicate, of 166, Piccadilly.

At Durango, near Bilbao, too, on the 24th, a similar state of affairs ensued. A crowd of about 30,000 people assembled to see Lieut. Gibbs fly on a Henry Farman biplane, and Prevetau on a Blériot monoplane. Unfortunately the weather was against flying, and the crowd vented its disappointment by smashing the grand stands and burning the two aeroplanes.

Flying in the Transvaal.

A TELEGRAM from South Africa states that a few days ago M. Kinmerling made three good flights at Orange Grove, Transvaal, in one of which Mr. Thomas Thornton, of the South African Aero Club, was carried as a passenger.

Curtiss in Texas.

AT San Antonio, Texas, on the 24th, Glenn Curtiss gave several exhibition flights, and during one with a passenger he rose to a height of 700 ft., while the speed worked out at 45 miles an hour. C. K. Hamilton was also flying on a similar machine, but a little faster, and at an altitude of 900 ft.

Boy Scouts and Ballooning.

AN interesting series of experiments is being arranged by the executive of the Aerial League, in conjunction with the Boy Scouts Association, to test the value of signalling in connection with

balloons. To-day, Saturday, three balloons will ascend, lent respectively by Major Baden-Powell, the Hon. C. S. Rolls ("The Imp"), and the Continental Tyre and Rubber Co. (Great Britain), Ltd. ("Continental No. 1").

The Scouts are entering into the experiments with great enthusiasm, and several prizes will be awarded for the first Scout who reaches any balloon at the moment of its descent, and a silver scout spoon for the best report of the journey as observed from below.

A Sign of the Times.

THE increased interest which is now being taken generally in the development of aviation, is evidenced by the attention which is being paid to the subject by the financial Press. Recently the *Financial News* has published several very practical articles on the subject, and they now give regularly quotations of companies connected with flying.

Wheels and Axles for Chassis.

As some difficulty has been experienced by some flyers who are building their own aeroplanes, and wish to fit wheels and skids of the Farman type, in obtaining these fittings, we may mention that Messrs. Eyquem's Patents inform us that they have a number of these sets in stock, fitted with 700 x 85 mm. tyres, the combination weighing 11 lbs.

AIRSHIP NEWS.

King Edward and an Airship.

As H.M. the King during his short stay at Pau was unable to find an opportunity to visit the flying ground, the owners of the dirigible "Ville de Pau" decided to carry out a series of manoeuvres over the hotel where the King was staying on Friday of last week. At a height of two or three hundred feet the airship circled round and round, a great Union Jack flying below the car in honour of King Edward, who viewed the airship from the balcony of the hotel. Subsequently when His Majesty returned by car to Biarritz the airship flew above him for five or six miles out of the town, and then returned to its shed. On the previous day two ascents were made; one with eleven passengers, and the second with seven.

German Airship Review.

AFTER their manoeuvres at Cologne, a squadron of the German aerial fleet, consisting of "Zeppelin II," "Gross I," and "Parseval II" set out to visit Homburg in order to be inspected by the Kaiser. Starting from Cologne at 11.30 a.m. on Friday, the three vessels kept in procession and reached Homburg about 4 p.m. The Zeppelin and Parseval descended at the appointed place without incident, but there was some difficulty with the Gross. This, however, was not serious, and the three vessels were duly inspected by the Kaiser, Kaiserin, and Princess Victoria Louise, and the officers of their suite. The Kaiser subsequently expressed a desire that a monument should be erected to mark the site of the first airship review.

Troubles of the Return Journey.

ON the following day, Saturday, the airships were to return to their head-quarters, but the Parseval was the only one to do so. After a vain attempt to get the "Gross I" away, she was deflated and packed up for return by rail, and Zeppelin waited until Monday

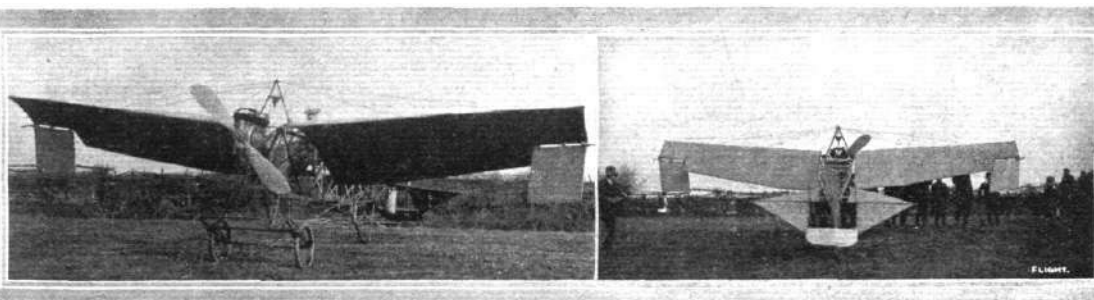
for a supply of hydrogen, and incidentally also for the weather to moderate. As, however, there was little sign of the weather breaking, it was decided to attempt the journey on Sunday. After five hours struggling with the wind, however, only 25 miles had been traversed, and it was therefore decided to come down near Limburg. Troops were rapidly brought up to guard the ship, and during the night they had many thrilling experiences owing to the gale. Early in the morning fresh supplies of hydrogen arrived, and the work of filling up the balloon commenced. About half-past twelve a violent squall of wind swept across the ground, carried the airship away, and about an hour later it was caught by some trees near Weilburg. There the wind damaged the framework of the vessel beyond all hope of repair, but the engines can probably be put in good order again. Fortunately no one was in the cars of the vessel when it blew away, but several of the men who were holding her down were seriously injured by being flung to the ground.

German Army Manoeuvres and Flight.

It is reported from Berlin that extensive use will be made of both aeroplanes and airships in connection with the Army manoeuvres which are to take place from September 8th to 10th, in the vicinity of Königsberg and Dantzig, on the Baltic Coast. Airships of the Zeppelin, Gross, and Parseval types will co-operate with Wright flyers in scouting and reconnaissance work.

A New German Airship Garage.

NO doubt in view of the above announcement, the German military authorities are arranging to build a military airship dock, with hydrogen generators and barracks for a detachment of the airship battalion at Königsberg. The shed will be built of iron, and be about 150 metres in length. It is to be completed in the autumn.



THE BRITISH-BUILT "GROSE" MONOPLANE.—View from in front and behind. The general dimensions are:—Span, 26 ft.; length, 25 ft.; surface, main planes, 160 sq. ft.; engine, 20-25-h.p. In the photographs sent us by Mr. A. M. Grose, of Oakington, Cambs., the wings are set temporarily at a greater angle than is correct for flying, as at the time of photographing the engine and propeller were being tested by running freely over the ground. Mr. Grose is desirous of arranging for a suitable engine to complete his equipment.

CORRESPONDENCE.

*. The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents asking questions relating to articles which they have read in **FLIGHT**, would much facilitate our work of reference by giving the number of the letter.

NOTE.—Owing to the great mass of valuable and interesting correspondence which we receive, immediate publication is impossible, but each letter will appear practically in sequence and at the earliest possible moment.

CAMBERED PLANES.

[482] I have read "Naval Constructor's" article on "Aerial Propellers," and also the letters in your correspondence columns re "Propellers," and concur in every respect with your remarks at the end of Mr. F. C. Harrop's letter (352).

The aeroplane and the propeller-blade are undoubtedly analogous cases, and it concavity is correct practice for one, it must be correct for the other. Likewise, if a dipping edge be advantageous to the aeroplane, a dipping edge should also be incorporated in the design of a propeller-blade.

The angle which the tangent to the leading edge of an aeroplane, or, to speak more correctly, an aerofoil, should make with the line of direction of flight, should vary with the velocity of flight; and similarly, the angle which the tangent to the leading edge of a propeller-blade makes with the helical line of direction of movement should vary from point to point along the leading edge, owing to the increased peripheral speed as you get further from the axis of revolution.

This angle should be such that the propeller-blade or plane enters the air in a direction parallel to the lines of flow of the air.

The designers of hydraulic centrifugal pumps and turbines are careful to arrange that the vanes or blades shall enter the liquid in this manner, and the designers of steam turbines are equally in agreement on this point.

The economic result of such design is well proven.

The purpose of an aerofoil or propeller-blade is to take hold of a mass of air and communicate motion to it in such direction that the reflex force generated simultaneously dominates and acts in opposition to the force of gravity in the case of the aerofoil; or propels the mass of the aerodone in its direction of flight in the case of the propeller-blade.

It is perfectly obvious then that as the air enters in lines of flow parallel to the surface at the leading edge of the plane that the surface of the plane must have such a concave curvature as will impart velocity to the mass of air coming within its sweep in such a manner that the reactive force balances gravity.

The pressure on such a curvature will at any point act at right angles to the tangent at that point: consequently the upward or vertical component in the case of an aerofoil of such pressure will get less, and the backward or horizontal component get greater, as the angle which the tangent to the curvature makes with the line of direction of flight gets greater. It is a matter of calculation to find out at what such angle the upward lifting component counterbalances the weight of engine required to generate it and overcome at the same time the backward retarding component.

Having settled this angle of trailing edge, all that remains is to connect it with the angle of leading edge with the most suitable and efficient surface of curvature.

There are two important reasons deciding that the grading of this curve should be parabolic.

Firstly, as is well known, the most advantageous and efficient manner in which to change the course of a fluid is to lead it in a path of gradually increasing curvature.

Secondly, and this is most important, that we may take advantage of every inch of sustaining surface, the curvature should be such that as the air be given downward velocity the surface must follow it up, keeping up an even pressure on it, in a similar manner to that in which the force of gravity acts upon a falling body.

With such a graded surface, the centre of pressure will remain relatively stationary for all variations of forward speed, other conditions being equal, and we get rid of the dangerous sluggish oscillations in the flight path.

We have now to decide on the plan form, and are helped in this decision by the knowledge that we must have as little side-edge as possible for the air to escape past; in other words, the greater the breadth in proportion to the depth for a given area of surface the better.

The area of the surface will be dependent upon the weight it is designed to carry, and upon the speed at which it is designed to travel.

The depth will be determined by the area and by the speed at which it is designed to travel.

The breadth will of course be determined by the area and by the depth.

Considerations of construction may modify the plan form, as for instance, designing to obtain greater strength for least weight, &c.

It is curious that in every design of aerofoil I have examined, and they are many, the curvature has been formed gradually flatter towards the trailing edge; this formation evidently entailing a falling off of the pressure reaction, with accompanying inefficiency.

Apologising for the length of this letter, the importance of the subject being my justification,

BELTON T. HAMILTON, M.I.A.E., A.M.I.Mech.E.

Willesden Lane, N.W.

[The above most interesting letter touches several fundamental points in aerofoil design, and also therefore—admitting the analogy between the aerofoil and the propeller—in the design of propeller-blades. Before it will be possible accurately to design either the deck of an aeroplane or the blade of a propeller with any degree of certainty as to its efficiency, reliable data will have to be collected on every point that Mr. Hamilton has raised.]

While agreeing in the main with the gist of our correspondent's remarks, we should like to suggest that his statement with respect to the camber is especially debatable where it relates to the maintenance of a uniform pressure reaction from entering edge to trailing edge. Approximately parabolic curves are often used in setting out the section of an aeroplane deck, but, as Mr. Hamilton remarks, the curvature flattens off towards the trailing edge. We judge that our correspondent takes exception to this design, but it seems to us that there may possibly be practical grounds for reducing the pressure intensity in the vicinity of discharge.

We are not so much referring to any question of possible loss through disturbances of the class that characterise the air stream in the vicinity of the extremities of the plane, as to the probable influence that the trailing portion of the plane has on the stability of the whole member. From a purely theoretical point of view, a camber represented by the arc of a circle would make a satisfactory plane. The brothers Wright found that it was desirable in practice to shift the maximum versine close up to the leading edge, thereby converting the circular into a parabolic arc, and modern practice seems to approve of the extending of the trailing portion of the plane so that the trailing edge shall always be well below the level of the leading edge. Some reference is made to this matter in Lanchester's "Aerodynamics," p. 281, where the author speaks of curtailing the dipping front edge.

In connection with the dipping front edge itself, it is important to bear in mind the effect of the cyclic up-current as giving an upward trend to the air before it meets the leading edge of the plane. This point, to which we have had occasion to refer in **FLIGHT** before (notably Vol. I, p. 296), is apt, if ignored, to confuse any discussion on the attitude of a plane in flight.—ED.]

15-20.H.P. ENGINE WANTED.

[483] Could you or some reader of your valuable paper tell me where I could obtain a cheap flight engine (15-20 h.p.), with or without propeller, for sale or hire?

Blackrock, Co. Dublin.

G. HUTTON.

AERONAUTICS AND THE NAVY.

[484] With regard to Mr. Griffith Brewer's article on "Aeronautics for the Navy," it may be interesting to some of your readers to point out that the author does not consider man-lifting kites as part of a warship's equipment. As a matter of fact, at this moment, one, at least, of our battleships is experimenting in this direction. The kite does not possess the grave disabilities which, in my belief, would make the use of captive balloons at sea only possible on rare occasions.

CHARLES C. TURNER.

THE RIGHT SORT OF WORKMAN.

[485] In your issue of March 19th, 1910 (No. 408), there appears a plea and suitability of pattern-makers for aeroplane work, and what is required of the mechanic who takes in hand the work of aeroplane construction. No one will question that he must be a good judge of wood, strength, and quality or accuracy; but to state of all wood-working trades, for constructional purposes or manipulation, he is pre-eminent, is taking to himself that which is very wide of the mark, and bordering on

self-praise. That pattern-makers may "adapt" themselves to the work is very probable. We claim that cabinet-makers are the most experienced of what is required, and the manipulation of wood, particularly for constructive purposes, have a much greater knowledge than a pattern-maker can ever hope to have. A cabinet-maker's ordinary occupation has taught him what is essential in woodwork for aeroplane construction, and do not need adaptability. This has been recognised by firms of the highest standing, who employ them, and as the industry develops a larger proportion of cabinet-makers will be employed.

FRANK SMITH,
General Secretary Amalgamated
Union of Cabinet-Makers.

Liverpool.

BAMBOO, H.P. AND PROPELLERS.

[486] Will you kindly inform me through your appreciated columns—

1. Where bamboo in 20-ft. lengths is obtainable, and price.
2. Should the "thin" or "taper" end be used for the tail part of the frame?
3. Is there a system for making joints in bamboo other than by binding or by boring holes with red-hot wire?
4. The wing span is 20 ft., and length about same; width of wings is 5 ft. Can you tell me lowest h.p. engine required to drive it, also what length propeller?

Harrow Road.

H. NILRUH.

GLIDERS.

[487] Many thanks for the answer to my last inquiry. Since writing to you I have modified the design of the glider. As at present projected it has a 36 ft. span and a 7 ft. chord, giving an area of 252 sq. ft. I intend to fit an elevator, or tail, or both, of sufficient area to support the weight of their own outriggers. I also contemplate launching it from a Wright pattern derrick and rail. This would enable a good speed to be attained to start with. Do you think:—i. That 252 sq. ft. is sufficient area (I weigh 150 lbs.)? ii. That the Wright system is suitable for launching? iii. That an elevator, or a tail, or both, is best? iv. That bamboo poles 18 ft. long, diameter $1\frac{1}{2}$ ins., tapering to $1\frac{1}{4}$ ins., are sufficiently strong for the main spars, if bound between each knot, and well stayed with wire?

W. W. SMITH.

i. The new area is much nearer a value that justifies preliminary experiment. ii. Probably; would be worth trying. iii. Follow a definite system like the Wrights' first; modify only as the result of experience. iv. The binding of the bamboo is a good feature, but it is difficult to give an opinion on the size owing to the flexible nature of bamboo. It would be a good plan to test the deflection of the rods selected by hanging weights on the end.—Ed.]

ANOTHER BRITISH MACHINE.

[488] Enclosed is photo of my latest machine, which I tried for first time last week.

I have not yet attempted to rise her, but results so far are very promising. Particulars of machine are:—Equipped with wheels and skids, weight complete under 500 lbs., front elevator and ailerons, controlled by one lever, rudder actuated by feet, 20-h.p. motor air-cooled, auxiliary exhausts, adjustable pitch propellers 2 ft. $8\frac{1}{2}$ ins. at 1,500 revs. per min. Total surface 200 sq. ft., all planes double surface.

In photo I am seated. My brother, by propellers, is constructing a biplane, a few particulars of which he hopes to favour you with when completed.

The whole machine, bar engine, has been entirely constructed in Monmouth at Mr. T. Preece's Carriage Works.

Monmouth.

CHAS. H. PARKES.

BIPLANE CONSTRUCTION.

[489] No doubt aviators will be asking themselves the question, especially after the fine recent performances, "Which is the most reliable machine?"

For my part I am in favour of the biplane, and should recommend it to beginners as being more reliable and controllable. The monoplane requires a good deal more handling, and has to be driven at such a high speed before it will lift, and of course the same thing happens when it comes to earth, the descent being most rapid.

As what we want is an aeroplane that will lift quickly, and come to earth slowly, I should like to suggest the following hints to amateur constructors:—

Biplanes should be made as light as possible, the ribs being spaced about 1 ft. apart and $\frac{3}{4}$ in. in width will answer very well. Make the main-spars stronger than for the outer planes.

See that you have the proper camber— $\frac{1}{10}$ of the chord is about right—and that it is well forward, this works out at 3 ins. when the ribs are laid on a flat surface.

Make the planes as flat as possible, a big hump on the top does not count for much.

Be sure and make the outrigger frame strong, as I find that what looks strong in theory is weak in practice. The width of the wood should be $1\frac{1}{2}$ in. by 1 in., and can be tapered at the front.

Look to the rudder surface area; it is no use having a small one, as you will have to steer on the earth before you fly.

Propeller pitch is a great point. A propeller blade that is made to resemble a knife is not much use; an angle of about 40° should be all right. It is thrust we want, not revolutions.

The main planes can be built up as illustrated in previous Nos. of FLIGHT, with detachable struts.

Be very careful to make the end ribs extra strong, as when the planes are being covered the end ribs have the knack of giving in. It is advisable to fasten a piece of thin wood across at an angle of 45° from the spar to the rib, which will stiffen them, and the fabric can be fixed by nailing a thin lath on the top into the blocks of the ribs.

Wandsworth.

WALTER YEATMAN.

SINGLE-SURFACED PLANES.

[490] I would be obliged if you or one of your readers could inform me if it is advisable to have the ribs of a single-surfaced plane on the upper or lower side.

Croydon.

S. A. HALL.

[We would suggest the upper side, leaving the under side quite free and smooth, but some of our readers may possibly have arguments in favour of the reverse, and if so we should like to know them.—Ed.]

WING PROPULSION.

[491] Having taken in your excellent paper almost from its birth, and read the many interesting letters of your correspondents, I feel I should like to ask their and your opinion on a new method



Mr. Charles H. Parkes' monoplane.

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